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**Matthew P. Longnecker, David C. Bellinger, David Crews,
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Ezra S. Susser**

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Matthew P. Longnecker,¹ David C. Bellinger,² David Crews,³ Brenda Eskenazi,⁴ Ellen K. Silbergeld,⁵ Tracey J. Woodruff,⁶ Ezra S. Susser⁷

¹Epidemiology Branch, National Institute of Environmental Health Sciences, National Institutes of Health, Department of Health and Human Services, Research Triangle Park, North Carolina, USA;

²Children's Hospital Boston/Harvard Medical School, Boston, Massachusetts, USA;

³University of Texas at Austin, Austin, Texas, USA; ⁴Center for Children's Environmental Health Research, University of California Berkeley School of Public Health, Berkeley, California, USA;

⁵Department of Environmental Health Sciences, Johns Hopkins University, Baltimore, Maryland, USA; ⁶U.S. Environmental Protection Agency, San Francisco, California, USA;

⁷Division of Epidemiology, Joseph L. Mailman School of Public Health, Columbia University, New York, New York, USA

Address correspondence to Matthew P. Longnecker, NIEHS Epidemiology Branch, PO Box 12233, Research Triangle Park, NC 27709 USA. Telephone (919) 541-5118. Fax (919) 541-2511. E-mail: longnecker@niehs.nih.gov

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Running Title: Assessing endocrine disruption in the NCS

Keywords: environment, chemical actions, epidemiology, health, cohort studies, child, endocrine disruption

Abbreviations:

CHDS, Child Health and Development Study

CPP, Collaborative Perinatal Project

DBP, dibutyl phthalate

DDE, dichlorodiphenyldichloroethene

DDT, dichlorodiphenyltrichloroethane

DEHP, di-(2-ethylhexyl) phthalate

NCS, National Children's Study

PBDE, polybrominated diphenyl ether

PCBs, polychlorinated biphenyls

TCDD, 2,3,7,8-tetrachlorodibenzo-*p*-dioxin

- I. Introduction
- II. Long-term Effects of the Endocrine Environment During Pregnancy and Early Life
- III. Endocrine Disruption as a Hypothesis in Human Studies
- IV. The Role of Endocrine Disruption Studies in the NCS
- V. Some Earlier Cohort Studies of Children's Health
- VI. NCS Features Allowing Assessment of Endocrine Disruption
 - A. Societal context
 - B. Intergenerational design
 - C. Linkage to other data sources
 - D. Addition of selected exposure and outcome measures
 - a. Exposure
 - b. Outcomes
- VII. Conclusion

Abstract:

In this paper we consider the importance of assessing endocrine disruption in a large new cohort that has been proposed, the National Children's Study (NCS). We briefly review evidence that endocrine disruption is a potentially important hypothesis for human studies and weigh the need for assessment of endocrine disruption in the NCS. We note the salient features of earlier, similar cohort studies that serve as reference points for the design of the NCS. Finally, we discuss features of the NCS that would allow or enhance assessment of endocrine disruption, even if endocrine disruption were not a primary hypothesis motivating the study. At this time, the evidence supporting endocrine disruption in humans with background-level exposures is not strong. Thus, a compelling rationale for the NCS will probably need to be based on core hypotheses that focus on other issues. Nonetheless, if properly designed, the NCS could serve as an excellent resource for investigating future hypotheses regarding endocrine disruption.